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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/538,524

06/10/2005

Kenji Kiyama

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04/08/2010

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EXAMINER

BASICHAS, ALFRED

ART UNIT

PAPER NUMBER

3743

MAIL DATE

DELIVERY MODE

04/08/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/538,524	<b>Applicant(s)</b> KIYAMA ET AL.	
	<b>Examiner</b> Alfred Basichas	<b>Art Unit</b> 3743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02 March 2010 and 01 April 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 2,5-8 and 10-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2,5-8 and 10-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 2, 5-8, and 13-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Morita et al. (US 4,545,307), which shows all of the claimed limitations.

For example:

2. (Currently Amended) A combustion apparatus comprising: a burner burning a fuel within a furnace in a theoretical air ratio or less (see at least figs. 1-3); an air port 7-11 arranged downstream of the burner and separated into an air injection port 11 injecting additional combustion air 4 into the furnace and an inhibiting gas injection port 23 injecting a nitrogen oxide generation inhibiting gas 6 constituted by at least one gas selected from the group consisting of combustion exhaust gas and a mixed gas of the combustion exhaust gas (see at least col. 8, lines 38-39) and air inhibiting a nitrogen oxide from being generated in a mixing region formed by both of a combustion gas generated by burning the fuel by means of said burner and the additional combustion air injected from said air port or near the mixing region (inherent), wherein said inhibiting gas injection port is provided on an outer peripheral portion of said air injection port (see at least figs. 2,3), at least a part of said outer peripheral portion being on a burner side of said air injection port (see at least figs. 2,3); and at least one blower for circulating combustion exhaust gas from an outlet of the

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furnace to an inlet of the flow path injecting a nitrogen oxide generation inhibiting gas, and for supplying the additional combustion air to the flow path injecting additional combustion air into the furnace (see at least col.7, lines 26-31).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morita et al. (4,545,307) in view of Tsuzi (4,135,874). Morita discloses substantially all of the claimed limitations, but fails to specifically recite the claimed blower/exhaust circulation. Tsuzi teaches an industrial boiler in which a blower g for circulating combustion exhaust gas from the outlet of the furnace and mixed with air at the inlet b,c so as to reduce NO<sub>x</sub> (see at least col. 1, lines 42-47). Accordingly, it would have been obvious to one having ordinary skill in the art to incorporate the recirculation arrangement taught by Tsuzi into the invention disclosed by Morita, so as to reduce NO<sub>x</sub>.

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morita et al. (4,545,307) in view of Tsuzi (4,135,874), and further in view of Kobayashi (5,231,937). The combination of Morita and Tsuzi teach substantially all of the claimed limitations, but fails to specifically recite the claimed exhaust/heat exchanger

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arrangement. Nevertheless, it is old and well-known in the art to lower the temperature of an exhaust gas by means of a heat exchanger, as evidenced by Kobayashi et al. (fig. 1.) Kobayashi teaches that such an arrangement promotes NO<sub>x</sub> reduction (see at least Abstract). Accordingly, it would have been obvious to one having ordinary skill in the art to incorporate the arrangement taught by Kobayashi into the invention taught by Morita and Tsuzi, so as to reduce NO<sub>x</sub>.

Note: While not every single claim and limitation is specifically addressed, each and every limitation in the rejected claims is taught by the prior art. Applicant is welcome to contact the examiner should applicant wish to have a particular limitation point out in the prior art.

### ***Response to Arguments***

6. Applicants' arguments with regard to the rejected claims have been considered, but are moot in view of the new grounds for rejection or are not deemed fully persuasive.

Applicants further assert that the addition of Tsuzi would significantly reduce the efficiency of the plant, but have failed to substantiate the allegation. Additionally, applicants are reminded that the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

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***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alfred Basichas whose telephone number is 571 272 4871. The examiner can normally be reached on Monday through Friday during regular business hours.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Tech Center telephone number is 571 272 3700.

April 8, 2010

/Alfred Basichas/  
Primary Examiner, Art Unit 3743